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ny.patent.docketing@dorsey.com
hollingsworth.miesha@dorsey.com
dufault.kim@dorsey.com



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/709,162
Filing Date: November 10, 2000
Appellant(s): TEARNEY ET AL.

Gary Abelev
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 14, 2011 appealing from the
Office action mailed January 6, 2011.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

An appeal has been commenced by the Appellant for U.S. Application Serial No. 11/781,722 with a filing date of July 23, 2007, which is a continuation application from the present application.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 142-146 stand allowed.

Claims 68, 70-72, 74, 76-82, 84-94, 96-102, 104-141, 147-148, 150-154, 156-157 and 159-162 are rejected.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

5,318,024	KITTRELL ET AL	6-1994
WO 99/44098	WEBB ET AL	9-1999
6,941,121	OLINGER ET AL	3-1976
5,275,594	BAKER ET AL	1-1994

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 68-75, 81-82, 84-87, 89-95, 101-102, 104-107, 109-116, 118-128, 130, 137-140, 147-148, 152-157 and 161-162 are rejected under 35 U.S.C. 102(b) as being anticipated by Kittrell et al. (US Patent No. 5,318,024) – herein referred to as Kittrell.

Kittrell discloses a laser endoscope for generating a spectrally resolved spatial (therefore, at *least* two-dimensional) image of tissue. Kittrell illustrates at least one lens arrangement in Figures 21 and 22 with numeral **40** and **41**, which guides light into optical fibers. Furthermore, Kittrell teaches that the shield **12** maybe use to control spot size by means of lenses inserted within the shield (column 5, lines 33-34). Also, Figure 23 illustrates a reflective mirror lens grating combination **68** at the return end of the device. In several embodiments of Kittrell, a lens, multiple lenses, holographic elements, gratings, prisms or a mirror can be used to control the location and divergence of laser light and return fluorescence or scattered light (column 13, lines 64-68). These elements (a lens, multiple lenses, holographic elements, gratings, prisms or a mirror) can be controlled by wires. Light from conventional sources may be used broadband, or it may be filtered or dispersed (column 20, lines 59-62). The laser catheter can be used to penetrate most types of tissues (column 6, lines 5-21), thereby modifying a property of the structure. As illustrated in Figure 25, the distal ends of the optical fibers are at different angles and column 8, lines 57-60 states that the distal ends of the optical fibers are optically polished. As seen in Figure 17C, the light emitted from the end of the probe is made to overlap.

Regarding claim 147, Kittrell's device both illuminates the anatomical structure via the optical fiber as well as collects return light via the optical fiber. This returned light enters the optical fibers after passing through the lens/optical shield structure. Therefore, Kittrell teaches this limitation.

Regarding claim 148 of the current application, claim 1 of Kittrell states, "processing the separated light received by the detector with a computer such that the spectrally resolved light provides a displayable spatial image of the illuminated tissue."

Claims 88, 108, 117, 129, 131-136, 141 and 158-160 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittrell in view of Olinger et al. (US Patent No. 3,941,121) – herein referred to as Olinger. Kittrell is discussed above in the rejection of claims 68, 89, 113, 125. However, Kittrell fails to provide a fluid displacement arrangement.

Olinger teaches a needle endoscope including a hollow needle of about 18-gauge (*see* Abstract). To clear the area for better viewing in certain situations, a syringe can be connected to a luer lock, associated with the coupling, and warm normal saline solution can be injected through the electrode channel (column 10, lines 32-40). It would have been obvious to combine the teachings of Olinger with the device of Kittrell in order to provide operative visual supervision of a treatment procedure performed through an operative channel of the needle and which is small enough to be universally acceptable for introduction into previously inviolate tissue area without resorting to open surgery techniques (column 2, lines 56-62).

Claims 76-78 and 96-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittrell in view of Webb et al. (WO 99/44089) – herein referred to

as Webb. Kittrell is discussed above in the rejection of claims 75 and 95. However, Kittrell fails to teach a specific number of resolvable points that make up the image.

Webb teaches that the number of resolvable points is related to the total bandwidth of the source and the bandwidth of the spectrum. The number of resolvable points may be any number governed by Equation (2) on page 3. An example is provided on page 4. Absent the showing of criticality, it would have been obvious to one of ordinary skill in the art at the time the invention was made to create an image with any number of resolvable points based on the equation of Webb as a matter of design choice.

Claims 79-80 and 99-100 rejected under 35 U.S.C. 103(a) as being unpatentable over Kittrell in view of Baker et al. (US Patent No. 5,275,594) – herein referred to as Baker. Kittrell discloses a catheter used for diagnosis and removal of arterial or vascular obstructions (column 1, lines 14-16). See the previous description of Kittrell in the rejection of claims 68 and 89. However, Kittrell does not explicitly disclose a diameter for the probe.

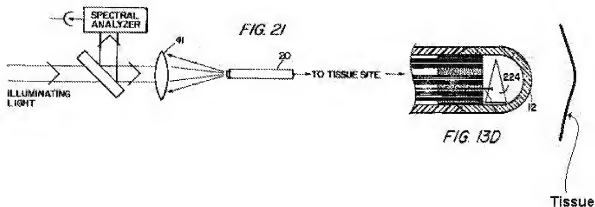
Baker teaches that the diameter of arteries is on the order of one to a few millimeters (column 1, lines 40-41). Therefore, it would be obvious to one of skill in the art at the time the invention was made to design the probe of Kittrell to have a diameter of less than about one millimeter in order to allow the device to enter any location in the arteries and vasculature of the patient, based on the teaching of Baker.

(10) Response to Argument

The Appellant begins by re-iterating the independent claims on pages 25-27 of the Brief.

Beginning on page 28 and ending on page 30, the Appellant states that each of the independent claims (claims 89, 113, 125 and 131) recite (among other limitations) "an image-forming lens arrangement that forms an image of the anatomical structure." The Appellant states that Kittrell fails to teach this limitation. The Examiner respectfully disagrees. The Kittrell Patent discloses a device for forming an image (see the Abstract) and this device utilizes lenses (*see* lenses **40** and **41** of Figures 21 and 22). Therefore, a broad interpretation of the claim language is taught by Kittrell in that Kittrell utilizes lenses with the ultimate purpose of forming an image – an image-forming lens arrangement. The claims state that there is an image-forming lens arrangement, which lends for a system, or arrangement, of lenses rather than a single lens for forming the image. Furthermore, Kittrell teaches that the shield **12** may be used to control spot size by means of lenses inserted within the shield (column 5, lines 33-34). Also, Kittrell explicitly states, "By making the surfaces curved instead of flat the optical shield 12 may also be made to act as a lens (*see* column 15, lines 3-4)." Therefore, Kittrell teaches an arrangement of lenses at either end of the optical fiber **20** (*see* Figures 21 and 22). And as stated in every sentence of the Abstract, "A laser endoscope is disclosed for generating a spectrally resolved spatial image of tissue..." "... used to deliver laser radiation to tissue to be imaged..." and "... used to generate an image of tissue that can assist in diagnosis and treatment."

On page 31 the Appellant argues that the configuration of "the image-forming lens providing the radiation to the dispersive arrangement which then forwards the dispersed radiation to the structure" is in no way described or shown in the Kittrell Patent. The Examiner respectfully disagrees and provides the side-by-side illustration of Figures 21 and 13D from the Kittrell Patent for explanatory purposes (modified by adding "tissue" to the far right side). As can be seen, illuminating light first passes through lens 41 (which is part of the lens arrangement), after this the light passes through the optical fiber 20 and then through the prism 224 (i.e., the dispersive arrangement), then through the shield 12 (which is optionally a lens), reacts with the tissue via absorption, reflect, etc. Then, some of the light reverses back through the shield 12, through the prism 224, back to through the fiber bundle 20, through lens 41 and to the spectral analyzer. As such, the configuration as claimed is positively taught by Kittrell, as the light at least encounters the prism after lens 41, which is part of the lens arrangement.



Beginning on page 31 and continuing on to page 32, the Appellant argues that the Examiner failed to perform his job appropriately by not performing a search and contradicting the interview summary. The Examiner respectfully disagrees. Firstly, the discussion of that interview proceeded such that the Inventor stated many times that this was the world's smallest endoscope. The Examiner stated that, based on the claim language of claim 68, the invention being claimed was at least a lens and a prism that light may pass through each and that a person holding a lens in one hand and a prism in the other would read on the claims. As such, the inclusion of claims 69, 73 and 75 would at least provide a complete claim (based on the preamble) and in view of the discussion of the invention being an endoscopic system. The Kittrell reference has been used to reject claims 68, 69, 73 and 75 since the Office Action mailed on December 9, 2008. As such, the Examiner would by no means agree that Kittrell reads over these claims simply by combining them into one. The Interview summary (which is indeed a summary and by no means a verbatim copy of the discussion of the interview) stated:

The Examiner tried to emphasize that at least claim 68 is incomplete as the preamble states "An apparatus for obtaining information..." while there is no arrangement in the independent claim for actually obtaining the information. The Examiner suggested that the subject matter of claims 69, 73 and 75 be incorporated to provide the full breadth of the system - an endoscopic system. Further search and consideration will be required upon receipt of formal amendments and arguments.

The Advisory Action stated with more detail:

Contrary to the Applicant's statement on page 37, the Examiner did not agree that Kittrell lacks the three bulleted items (see the Examiner Interview Summary dated 2/22/11). The Examiner stated in the interview that these three aspects of claimset would be a good direction to go with regard to amending the claims so as to more clearly define what the system is - that is, an endoscopic system. Otherwise the system as claimed comprises a lens and a prism (in its most broad interpretation) and the system would be satisfied by a human holding both a lens and a prism in the air so that light may pass therethrough. Therefore, the Examiner stated that incorporating claims 69, 73 and 75 provide for the other aspects of an endoscopic system (i.e., a light source that illuminates the object with the electromagnetic radiation, an optical fiber to provide the electromagnetic radiation from the source to the target being imaged, and an imager that receives the returned light). The Examiner certainly did not agree that these are lacking in Kittrell. In Figure 21 of Kittrell, an optical waveguide is labeled as 20, and a further arrangement which is structured to obtain the information is labeled as the 60. Furthermore, the spectrum obtained may be displayed to the user on spectral display 86 of Figure 23, which is at least a two-dimensional "image." Also, Kittrell teaches that "Light from conventional sources may be used broadband, or it may be filtered or dispersed (column 20, lines 59-62)" - see page 5 of the latest Final Office Action.

Furthermore, a further search was conducted, much to the disbelief of the Appellant. At the same time, Kittrell was reconsidered. Upon finding no other prior art reference that more clearly taught an image-forming lens arrangement in conjunction with a dispersive arrangement, Kittrell continued to be applicable and was maintained.

Regarding the Appellant's argument that the Examiner failed to consider the recitation of an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale, the Examiner respectfully disagrees. This claim recitation was rejected with Kittrell in the rejection dated December 9, 2008 as it

was found in both claims 68 and 73. The Appellant made no dispute over this language until the current Appeal Brief. As such, the Examiner will address this now by stating that an optical waveguide (i.e., the optical fiber of Kittrell) is entirely capable of transmitting and receiving information from the structure on a macroscopic scale. An optical fiber transmits information via light. The optical fiber does not differentiate the information being transmitted therethrough as being on a macro- or microscopic scale. Therefore, the optical fiber of Kittrell is capable of performing this limitation.

Regarding the Appellants argument on page 33 with regard to claim 147, the Examiner states that lens **41** of Figure 21 is illustrated as converging the illumination light into an end of the optical fiber. Therefore, it would be obvious to one of ordinary skill in the art that this light is brought to a convergent point at an image plane of the lens in order to direct it into the optical fiber. From there, the light (or at least a portion of the light, i.e., electro-magnetic radiation) is brought to the dispersive arrangement (i.e., the prism) and transmitted to the structure through the optical shield **12**. As such, this claim limitation is provided for by Kittrell.

(11) Related Proceeding(s) Appendix

The examiner has no comment on the Appellant's statement in the Related Proceedings in the Appendix to the appellant's brief.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

James Kish

/James Kish/

Examiner, Art Unit 3737

Conferees:

Brian Casler

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit 3737

/Janet C. Baxter/
TC 3700 TQAS